Quality Management Prenatal Care Study of Medicaid Mothers Who Delivered in 1999

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Introduction

North Carolina Medicaid is managed by the Division of Medical Assistance (DMA). The Quality Management Unit of the DMA Managed Care Section is comprised of medical staff who assure that Medicaid managed care programs provide quality, cost effective care. The Quality Management Unit is continuously involved in various activities such as utilization monitoring, patient satisfaction surveys, complaint monitoring, focused care studies and performance improvement projects in an effort to assess and measure improvement. The information resulting from these activities is useful for decision-making by enrollees, providers, and program administrators, as well as the State's policy makers.

North Carolina Medicaid is organized into four systems of care: fee-for-service, Carolina Access, Access II/III, and Health Maintenance Organizations (HMOs). Under fee-for-service, Medicaid providers are paid for each service they provide. Carolina Access was created in 1991 in an effort to provide continuity of care (a "medical home") for recipients. Building upon the successes of Carolina Access, ACCESS II/III provider networks began in 1998. The ACCESS II/III program consists of regional networks of Medicaid providers. Networks focus on community–based initiatives for case and disease management, further increasing the quality of care. Health Maintenance Organizations provide comprehensive medical services for specified groups of recipients under a capitated reimbursement structure. The following HMOs were participating in 1999: Atlantic Health Plans, Optimum Choice, The Wellness Plan, Maxicare, United Healthcare, WellPath Select Inc/ South Care. These HMOs were not statewide and usually available in only a few counties.

North Carolina has a history of higher than average low birth weight and infant mortality rates. In an effort to identify and impact the reason for these poor birth outcomes, the Quality Management Unit conducted a study of prenatal care within North Carolina Medicaid's three managed care systems.

The prenatal care study evaluated the timeliness and completeness of a Medicaid mother's prenatal care as well as compliance with national standards. Medical record information was carefully reviewed for a random subset of mothers who delivered in 1999 within the three systems of managed care. Based on the results of this study, the Quality Management Unit will plan future initiatives--such as provider collaboratives and educational activities--to improve the quality of prenatal care in North Carolina.

Methods

This study is based on a population of Medicaid mothers who delivered in 1999. A sample was selected using the following selection criteria:

- *Administrative documentation of prenatal care:* Mothers had administrative documentation of prenatal care in the first trimester of pregnancy, as defined by the HEDIS 2000 standards, "Prenatal Care in the First Trimester."

- *In-state provider participation only:* Only mothers who saw in-state providers were included.

- *Participant in a managed care group:* Mothers were associated with either Carolina Access, Access II/III, or a health maintenance organization (HMO). Fee-for service clients were excluded because of the small number of records that could be reviewed by the Division of Medical Assistant's contract with Medical Review of North Carolina (MRNC).

- *Random selection of counties:* To contain costs associated with the study, only mothers located in counties where the number of eligible deliveries was greater than 10 were included. This requirement was made so that MRNC could avoid traveling to distant counties where there were small numbers of records for review, to reduce costs. Thirteen counties were randomly selected for participation. The 13 counties randomly selected were Buncombe, Caldwell, Catawba, Cleveland, Cumberland, Franklin, Granville, Haywood, Henderson, Lenoir, Pasquotank, Rutherford, and Wake. To ensure HMO providers were included in the study, Mecklenburg and Guilford counties were also included.

The final random sample consisted of 387 mothers, located in 15 counties of North Carolina. Administrative records for mothers were linked to provider files to identify names and addresses of their providers. A 20 percent over-sample was also taken to compensate for possible problems in obtaining medical record information for some of the mothers in the sample. The field staff of the MRNC traveled to each county and reviewed charts. Medical Review of North Carolina collected chart information on 384 women. A chart abstraction tool, based on abstraction forms developed by the American College of Obstetrician and Gynecologists and The National Fetal and Infant Mortality Review Program, was used to review medical charts.

Medical Review of North Carolina reviewed records for providers who were affiliated with the mother at the time of delivery. Efforts were made to obtain a complete medical record history for each of the 384 mothers included in the study.

The findings for the quality management prenatal care study are presented in the following sections: Demographics, Prenatal Care Visits, Documentation of Prenatal Care Components, Documentation of Required Dates and Tests, Low Birth Weight &

Premature Deliveries, Group B Streptococcal Tests, Sexually Transmitted Diseases, and Herpes Simplex Virus.

Demographics

Of the 384 mothers, 282 were associated with Carolina Access providers, 49 with Access II/III providers, and 53 with HMOs. Demographic information about the mothers is presented in Table 1. Overall, 1 percent of the mothers were between ages 10 and 14, 26 percent were between the ages 15 and 19, 60 percent of mothers were between the ages 20 and 29, and 13 percent were between the ages 30 and 39. Two mothers were forty years of age or older.

Half of all of the mothers did not complete high school. Nine percent completed less than nine years of school. Thirty-nine percent of the mothers completed 12 years of education, 10 percent completed some college, and 2 percent had 16 or more years of schooling.

Sixty-five percent of the mothers were single, 17 percent had an unknown marital status, 10 percent were married, 4 percent were divorced, 4 percent were separated, and 1 mother was widowed. Fifty-three percent of the mothers were African American, 31 percent were white, and 4 percent were of other races. Racial information was unknown for 12 percent of the mothers. Demographic information is also presented for each system of care in Table 1.

Table 1. Demographics of the Study Population By Systems Of Care

Demographics	Carolina Access (n=282)	Access II/III (n=49)	HMO (n=53)	Total (n=384)
Age				
10-14	0	1 (2%)	2 (4%)	3 (1%)
15-19	70 (25%)	19 (39%)	12 (23%)	101(26%)
20-29	183 (65%)	21 (43%)	26 (49%)	230 (60%)
30-39	28 (10%)	7 (14%)	13 (25%)	48 (13%)
40+	1 (0%)	1 (2%)	0	2 (0%)
Education*				
Less than 9th grade	21 (8%)	7 (15%)	*	28 (9%)
9th -11th grade	106(40%)	21 (46%)	*	127(40%)
High school graduate	102 (38%)	18 (39%)	*	120 (39%)
Some college	32 (12%)	0	*	32 (10%)
College graduates & above	4 (2%)	0	*	4 (2%)
Marital status				
Married	28 (10%)	4 (8%)	7 (13%)	39 (10%)
Divorced	10 (4%)	4 (8%)	1 (2%)	15 (4%)
Separated	14 (5 %)	1 (2%)	0	15 (4%)
Single	179 (63 %)	38 (78%)	34 (64%)	251 (65%)
Widowed	0	1 (2%)	0	1 (0%)
Unknown	51 (18%)	1 (2%)	11 (21%)	63 (17%)
Race				
White	95 (34%)	22 (45%)	2 (4%)	119 (31%)
Black	136 (48%)	25 (51%)	41 (77%)	202 (53%)
Other	6 (2%)	1 (2%)	10 (19%)	17 (4%)
Unknown	45 (17%)	1 (2%)	0	46 (12%)

*Based on information from birth certificates (N=312). HMO mothers could not be matched to birth certificate information. There was missing educational information for 1 record.

Prenatal Care Visits

Approximately 20 percent of mothers had insufficient information in the medical record to determine the trimester prenatal care (PNC) began. The trimester PNC began was calculated using the last menstrual period (LMP) date and the date of the first PNC visit. To overcome the missing information, records from the study population were matched to birth certificates. Seventy-two mothers, most of whom were enrolled with HMOs, could not be matched to a birth record.

All records that were matched to a birth certificate had an indication of PNC that began in the first or second trimester (see Table 2). Birth certificate information showed that 93 percent of women began their prenatal care in the first trimester and 7 percent began their PNC in the second trimester. Twenty-three percent of women received their first PNC visit in the first month of pregnancy, 47 percent in the second month, 23 percent in the 3rd month, 3 percent in the 4th month, and 3 percent in the 5th month. Only one mother began PNC in the 6th month of pregnancy.

Of those mothers enrolled in Carolina Access, 92 percent began PNC in the first trimester. Comparatively, 98 percent of the women enrolled in Access II/III began their PNC in the first trimester.

Table 2. When Prenatal Care Began By Systems Of Care*

When Prenatal Care Began	Carolina Access (n=263)	Access II/III (n=45)	Total (n=308**)
1st Trimester	**243 (92%)**	**44 (98%)**	**287 (93%)**
1st month	63 (24%)	7 (16%)	70 (23%)
2nd month	116 (44%)	29 (64%)	145 (47%)
3rd month	64 (24%)	8 (18%)	72 (23%)
2nd Trimester	**20 (8%)**	**1 (2%)**	**21 (7%)**
4th month	9 (3%)	1 (2%)	10 (3%)
5th month	10 (4%)	0	10 (3%)
6th month	1 (0.4%)	0	1 (0.32%)

Information in this table was obtained from birth certificates. HMO mothers were not matched with birth certificate information.

**There were 4 matched records that had missing PNC information.

Prenatal care visit information was also tabulated for specific age groups. Results in Table 3 show no differences in the trimester PNC began for the mothers across age categories. The two mothers in the sample under the age of 15 began PNC in the first trimester. Ninety-three percent of mothers between the ages 15 and 39 began PNC within the first trimester. Seven percent of mothers between 15 and 39 began PNC in the second trimester.

Table 3. When Prenatal Care Began By Age Groups*

When Prenatal Care Began	Ages 10 - 14 (n=2)	Ages 15 – 19 (n=91)	Ages 20 - 29 (n=187)	Ages 30-39 (n = 28)	Ages 40+ (n=0)
Trimester 1	2 (100%)	85 (93%)	174 (93%)	26 (93%)	0
Trimester 2	0	6 (7%)	13 (7%)	2 (7%)	0
Trimester 3	0	0	0	0	0

*Information in this table was obtained from birth certificates. HMO mothers were not matched with birth certificate information.

Documentation of Prenatal Care Components

Medical records were reviewed for documentation of teaching and examination components that are integral parts of an obstetric evaluation. Results are presented in Table 4. Observing the overall results, 82 percent of the mothers had documentation of a comprehensive physical examination, 71 percent of the records contained documentation of nutritional counseling, 78 percent had documentation of prenatal vitamins, 84 percent had documentation of past medical history, 84 percent had documentation of substance abuse history, 63 percent had documentation of medications, 83 percent had allergies listed, 82 percent had documentation of patient's menstrual history, 85 percent had documentation of the patient's past pregnancies, 80 percent had documentation of weight, 72 percent had blood pressure documented, 57 percent had documentation of urine a urine test, 63 percent had documentation of fetal heart rate or tone, 65 percent had documentation of fetal movement, and 60 percent had received education on signs and symptoms of pre-term labor. The absence of these items from the medical record warrants further investigation to see if the problem rests in the documentation of the items or the failure to evaluate. See Table 4 for results by each system of care.

Table 4. Documentation of Prenatal Care Components By Systems of Care				
Components	**Carolina Access (n=282)**	**Access II/III (n=49)**	**HMO (n=53)**	**Total (n=384)**
Comprehensive initial physical exam	229 (81%)	42 (86%)	43 (81%)	314 (82%)
Documentation of nutritional counseling	193 (68%)	47 (96%)	33 (62%)	273 (71%)
Documentation of prenatal vitamins	209 (74%)	47 (96%)	44 (83%)	300 (78%)
Comprehensive past medical history	237 (84%)	42 (86%)	44 (83%)	323 (84%)
Documentation of patient's substance abuse history	236 (84%)	45 (92%)	43 (81%)	324 (84%)
Medications Listed	168 (60%)	38 (78%)	35 (66%)	241 (63%)
Allergies Listed	233 (83%)	42 (86%)	44 (83%)	319 (83%)
Documentation of patient's menstrual history	227 (81%)	42 (86%)	46 (87%)	315 (82%)
Documentation of patient's past pregnancies	238 (84%)	42 (86%)	47 (89%)	327 (85%)
Weight	228 (81%)	36 (73%)	44 (83%)	308 (80%)
Blood pressure	219 (78%)	15 (31%)	44 (83%)	278 (72%)
Urine	167 (59%)	30 (61%)	23 (43%)	220 (57%)
Fetal heart rate or tone	185 (66%)	31 (63%)	27 (51%)	243 (63%)
Fetal movement	178 (63%)	35 (71%)	38 (72%)	251 (65%)
Education on signs and symptoms of preterm labor	163 (58%)	30 (61%)	38 (72%)	231 (60%)

Documentation of Required Dates and Tests

Across all systems of care, 83 percent of records reviewed had documentation of the LMP date, 86 percent had the estimated date of confinement recorded, and 74 percent had a date of delivery. Eighty-three percent had a record of a blood type and Rh factor, 82 percent had antibody screen, 84 percent had a record of a hemoglobin test, 80 percent had a pap test, 81 percent had rubella results, 63 percent had a urinalysis test, 67 percent had a urine culture, 82 percent had hepatitis B results, 73 percent had HIV education/ counseling, 66 percent had an HIV test, 56 percent had maternal serum alpha fetal protein test, 78 percent had an ultrasound, 66 percent had a diabetes screening test, 8 percent an oral glucose tolerance test, and 68 percent had hemoglobin repeat test. See Table 5 for results within each system of care.

Table 5. Documentation of Required Prenatal Dates and Tests By Systems of Care**

Documentation	Carolina Access (n=282)	Access II/III (n=49)	HMO (n=53)	Total (n=384)
Prenatal Date Information				
Last menstrual period	231 (82%)	43 (88%)	44 (83%)	318 (83%)
Estimated date of confinement	237 (84%)	47 (96%)	47 (89%)	331 (86%)
Date of delivery	223 (79%)	48 (98%)	13 (25%)	284 (74%)
Prenatal Test Information**				
Blood type and Rh factor	235 (83%)	40 (82%)	45 (85%)	320 (83%)
Antibody screen results	230 (82%)	39 (80%)	46 (87%)	315 (82%)
Hemoglobin	238 (84%)	40 (82%)	46 (87%)	324 (84%)
Pap test	225 (80%)	39 (80%)	45 (85%)	309 (80%)
Rubella	225 (80%)	40 (82%)	45 (85%)	310 (81%)
Urinalysis	172 (61%)	41 (84%)	27 (51%)	240 (63%)
Urine culture	176 (62%)	40 (82%)	42 (79%)	258 (67%)
Hepatitis B	232 (82%)	40 (82%)	44 (83%)	316 (82%)
HIV education/counseling	201 (71%)	40 (82%)	39 (74%)	280 (73%)
HIV test	190 (67%)	26 (53%)	39 (74%)	255 (66%)
Maternal serum alpha fetal protein	163 (58%)	29 (59%)	23 (43%)	215 (56%)
Ultrasound	215 (76%)	38 (78%)	46 (87%)	299 (78%)
Diabetes screening test	181 (64%)	35 (71%)	36 (68%)	252 (66%)
Oral glucose tolerance test*	29 (10%)	1 (2%)	0	30 (8%)
Hemoglobin repeat test	193 (68%)	33 (67%)	35 (66%)	261 (68%)

* Report of % of mothers who had an oral glucose tolerance test regardless of previous diabetes screening test results.

** Documentation results associated with STDs and Group B Strep tests are presented in tables 8-13.

Low Birth Weight and Premature Deliveries

Information was obtained from birth certificate records about gestational age and birth weight of the baby delivered. Both of these measures serve as indicators of prematurity. The information abstracted from the medical records was not adequate for an accurate assessment of low birth weight and gestational age.

Birth weight and gestational age could not be obtained for mothers associated with HMOs, since none of the HMO records were matched to birth certificates. Overall results in Table 6 show that 3 percent of mothers had a gestational age under 35 weeks and 8 percent delivered low birth weight (under 2,500 grams) babies. The percentages for measures of prematurity vary by system of care. However, these differences may be due in part to random variation associated with the small numerators.

Table 6. Mothers Who Had Premature Babies By Systems of Care

Measures	Carolina Access (n=266)	Access II/III (n=46)	HMO (n=0)	Total (n=312)
Gestation < 35 weeks	6 (2%)	3 (7%)	*	9 (3%)
Birth weight <2,499 grams	18 (7%)	6 (13%)	*	24 (8%)

Table 7 shows results by age groups. Three percent of mothers between 15 and 29 years old had a gestational age under 35 weeks. No mothers age 10-14 and over 30 years of age had a gestational age under 35 weeks. Seven percent of mothers between 15 and 29 years old had low birth weight babies. No mother under age 14 or over the age of 39 delivered a low birth weight baby. Eighteen percent of mothers between 30 and 39 years old had a low birth weight baby. Given the low number of observations, caution should be taken in the interpretation of these percentages.

Table 7. Mothers Who Had Premature Babies By Age Groups

Measures	Ages 10-14 (n=2)	Ages 15-19 (n=92)	Ages 20-29 (n=190)	Ages 30-39 (n=28)	Ages 40+ (n=0)
Gestation < 35 weeks	0	3 (3%)	6 (3%)	0	0
Birth weight <2,499 grams	0	6 (7%)	13 (7%)	5 (18%)	0

Group B Streptococcal Tests

Group B Streptococcus (Group B Strep) is a bacterium that can cause severe illness in infants, pregnant women, the elderly, and adults with other illnesses. Group B Strep is the most common cause of life threatening infection among newborns.

Medical records were reviewed for documentation of tests for Group B Strep. Results are presented in Tables 8 and 9. Overall, 52 percent of mothers were tested for Group B Strep. Of those tested, 24 percent had documentation of positive results.

Results across systems of care show that Access II/III had the highest percentage of mothers tested (61%), followed by Carolina Access (57%), and HMOs (19%). Among those tested, HMOs had the highest percentage of mothers who tested positive (30%), followed by Carolina Access (24%), and Access II/III (12%).

Table 8. Mothers Who Were Tested For Group B Strep By Systems of Care

Group B Strep	Carolina Access (n=282)	Access II/III (n=49)	HMO (n=53)	Total (n=384)
Total tested	160 (57%)	30 (61%)	10 (19%)	200 (52%)
Tested positive (of those tested)	39 (24%)	6 (12%)	3 (30%)	48 (24%)

Documentation was also examined across age groups. Mothers ages 10-14 had the highest percentage tested (67%, though this is based on very small numbers), followed by mothers ages 15-19 (56%), mothers ages 20-29 (52%), and mothers ages 30-39 (42%). The two mothers 40 years of age or older were tested.

Among those mothers tested, one of the two mothers ages 10-14 tested positive, 26 percent of mothers ages 15-19 tested positive, 23 percent of mothers ages 20-29 tested positive, and 30 percent of mothers ages 30-39 tested positive.

Table 9. Mothers Who Were Tested for Group B Strep By Age Groups

Group B Strep	Ages 10 – 14 (n=3)	Ages 15 - 19 (n=101)	Ages 20 - 29 (n=230)	Ages 30-39 (n = 48)	Ages 40+ (n=2)
Total tests	2 (67%)	57(56%)	119 (52%)	20 (42%)	2 (100%)
Tested positive (of those tested)	1 (50%)	14 (26%)	27 (23%)	6 (30%)	0

Sexually Transmitted Diseases

Sexually transmitted diseases (STDs) can cause irreversible harm to mothers and infants. Some STDs are associated with fetal deaths as well. Medical records were reviewed for documentation of STD tests. Specifically, test documentation for syphilis, gonorrhea, chlamydia, and HIV were reviewed. Tables 10 and11 present tests and outcomes by system of care and age. Overall, 84 percent of mothers were tested for syphilis, 66 percent were tested for HIV, 54 percent were tested for gonorrhea, and 33 percent were tested for chlamydia. Of those tested for chlamydia, 25 percent tested positive. Otherwise the percent who tested positive was very small.

Among systems of care, there was little difference in the proportion of mothers tested for syphilis (range of 82% to 87%). Access II/III tested a greater proportion of women for gonorrhea (65%), followed by HMOs (57%), and Carolina Access (52%). Health maintenance organizations tested the largest proportion of mothers for chlamydia (58%), followed by Carolina Access (29%), and Access II/ III (27%). HMOs tested the largest proportion of mothers for HIV (74%), followed by Carolina Access (67%), and Access II/III (53%).

Table 10. Mothers Who Were Tested For STDs By Systems of Care

STD Tests	Carolina Access (n=282)		Access II/III (n=49)		HMO (n=53)		(n
	Total Tested	Tested Positive*	Total Tested	Tested Positive*	Total Tested	Tested Positive*	Total Tested
Syphilis	236 (84%)	3 (1%)	40 (82%)	1 (3%)	46 (87%)	1 (2%)	322 (84%
Gonorrhea	146 (52%)	3 (2%)	32 (65%)	2 (6%)	30 (57%)	1 (3%)	208 (54%
Chlamydia	83 (29%)	21 (25%)	13 (27%)	4 (31%)	31 (58%)	7 (23%)	127 (33%
HIV	190 (67%)	0	26 (53%)	0	39 (74%)	0	255 (66%

*Of those tested

Sexually transmitted disease documentation results by age groups are presented in Table 11. All three mothers ages 10-14 were tested for syphilis and gonorrhea. Two of the three mothers ages 10-14 were tested for chlamydia and HIV. None of the three mothers in the 10-14 age group tested positive for any of the STDs.

Among mothers ages 15-19, 84 percent were tested for syphilis, 60 percent were tested for gonorrhea, 66 percent were tested for HIV, and 39 percent were tested for

chlamydia. Thirty-six percent of the mothers ages 15-19 tested for chlamydia had positive results. Four percent of the mothers ages 15-19 tested for gonorrhea had positive results.

Among mothers ages 20-29, 85 percent were tested for syphilis, 67 percent were tested for HIV, 52 percent were tested for gonorrhea, and 29 percent were tested for chlamydia. Twenty-five percent of mothers ages 20-29 tested for chlamydia had positive results. Three percent of mothers tested for gonorrhea had positive results. One percent of the mothers tested for syphilis had positive results.

Among mothers ages 30-39, 77 percent were tested for syphilis, 65 percent were tested for HIV, 46 percent were tested for gonorrhea, and 35 percent were tested for chlamydia. Eight percent of mothers ages 30-39 tested for syphilis had positive results. Six percent of mothers tested for chlamydia had positive results.

For the two mothers ages 40 and over, each were tested for syphilis, gonorrhea, and clamydia. One mother was tested for HIV. Neither of the two women 40 and over had any positive tests.

Table 11. Mothers Who Were Tested For STDs By Age Groups

STD Tests	Age 10 – 14 (n=3)		Age 15 – 19 (n=101)		Age 20 - 29 (n=230)		Age 30 – 39 (n = 48)		Age (n
	Total Tested	Tested Positive*	Total Tested	Tested Positive*	Total Tested	Tested Positive*	Total Tested	Tested Positive*	Total Tested
Syphilis	3 (100%)	0	85 (84%)	0	195 (85%)	2 (1%)	37 (77%)	3 (8%)	2 (100%)
Gonorrhea	3 (100%)	0	67 (60%)	3 (4%)	120 (52%)	3 (3%)	22 (46%)	0	2 (100%)
Chlamydia	2 (67%)	0	39 (39%)	14 (36%)	67 (29%)	17 (25%)	17 (35%)	1 (6%)	2 (100%)
HIV	2 (67%)	0	67 (66%)	0	154 (67%)	0	31 (65%)	0	1 (50%)

*Of those tested

Herpes Simplex Virus

Pregnant women infected with herpes simplex virus (HSV) may infect the baby during the delivery. For this reason, medical records were reviewed for the history and tests of HSV. Tables 12 and 13 present results from medical record documentation. Overall, 5 percent of mothers had documented history of herpes and 3 percent had

documentation of genital lesions. Among mothers with a history of herpes or genital lesions, 27 percent had documentation of a test for herpes.

Table 12. Mothers Who Had Documentation of Herpes or Genital Lesions By Systems of Care

Documentation	Carolina Access (n=282)	Access II/III (n=49)	HMO (n=53)	Total (n=384)
History of herpes	17 (6%)	3 (6%)	1 (2%)	21 (5%)
Genital lesions	6 (2%)	1 (2%)	2 (4%)	9 (3%)
History of herpes or genital lesions and tested for herpes	6 (26%) *	1 (25%) *	1 (33%)*	8 (27%) *

* Percentages were calculated using the number of mothers tested for herpes divided by the number of mothers with a history of herpes and genital lesions.

Examining documentation among systems of care, 6 percent of Carolina Access and Access II/III mothers had a history of herpes. Only 2 percent of HMO mothers had a history of herpes documented. Two percent of Carolina Access mothers, 4 percent of HMO mothers, and 2 percent of Access II/III mothers had documentation of genital lesions. Among mothers with a history of herpes or genital lesions, 33 percent of HMO mothers had documented tests for herpes, 26 percent of Carolina Access mothers had documented tests for herpes, and 25 percent of Access II/III mothers had documented tests for herpes. These small differences should be viewed with caution, since they are based on very small numbers.

Table 13. Mothers Who Had Documentation of Herpes or Genital Lesions By Age Groups

Documentation	Ages 10 - 14 (n=3)	Ages 15 – 19 (n=101)	Ages 20 - 29 (n=230)	Ages 30 – 39 (n=48)
History of herpes	0	5 (5%)	14 (6%)	2 (4%)
Genital lesions	1	3 (3%)	5 (2%)	0
History of herpes or genital lesions and tested for herpes	0	3 (38%)	5 (26%)	0

* Percentages were calculated using the number of mothers tested for herpes divided by the number of mothers with a history of herpes and genital

Results of herpes documentation by age groups (Table 13) show that 5 percent of mothers ages 15-19, 6 percent of mothers ages 20-29, and 4 percent of mothers ages 30-39 had documentation of a history of herpes. No mothers under age 15 or over age 39 had a history of herpes. Three percent of mothers ages 15-19 and 2 percent of mothers ages 20-29 had documentation of genital lesions. One of the three mothers ages 10-14 had documentation of genital lesions. Among mothers ages 15-19 with a history of herpes or a genital lesion, 38 percent had documented tests for herpes, and 26 percent of mothers ages 20-29 had documented tests for herpes. No mothers under age 15 or over age 29 had documented tests for herpes.

Discussion

It is unclear from record review information if the low percentages for some items reflect a failure to perform a particular service, a failure to document it, or both. Certainly the record reviews did not obtain some information that should have been recorded on each record, such as the LMP date and the date of delivery. A match between the sample and the birth certificate information provided some of this information that was missing from the medical record review. Other results, such as low percentages of group B strep testing and urinalysis, could also be due to a lack of reporting of the information in the medical records and/or incomplete abstraction from the medical records. These results will be used by the Quality Management Unit to help plan provider collaboratives and educational activities to improve the quality of prenatal care.